

220760US-0 PCT

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF: :
FLORENCE L'ALLORET : ATTN: APPLICATION DIVISION
SERIAL NO: NEW U.S. PCT APPLN :
(BASED ON PCT/FR02/00101)
FILED: HEREWITH :
FOR: DISPERSIONS STABILIZED AT
TEMPERATURES OF FROM 4 TO 50
DEGREES CELSIUS BY MEANS OF
A POLYMER COMPRISING WATER-
SOLUBLE UNITS AND UNITS WITH
AN LCST

PRELIMINARY AMENDMENT

ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON, D.C. 20231

SIR:

Prior to examination on the merits, please amend the above-identified application as follows.

IN THE CLAIMS

Please cancel Claims 1-24.

Please add the following new claims.

25. (New) A dispersion comprising at least one aqueous phase and at least one oily phase, wherein the aqueous phase comprises a polymer comprising water-soluble units and

units with an LCST, the units with an LCST having in water a demixing temperature of from 5 to 40°C at a concentration of 1% by mass, and the polymer being present in the aqueous phase at a concentration such that the gel point of the aqueous phase is from 5 to 40°C, to ensure the stability of the dispersion when it is subjected to temperature variations in the range from 4 to 50°C.

26. (New) The dispersion as claimed in claim 25, formed by an oil-in-water emulsion in which water is the aqueous phase.

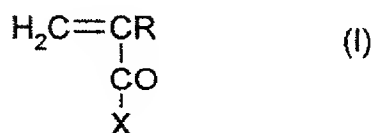
27. (New) The dispersion as claimed in claim 25, formed by a water-in-oil-in-water multiple emulsion.

28. (New) The dispersion as claimed in claim 25, formed by a dispersion of mineral and/or organic particles in the aqueous phase of an oil-in-water emulsion.

29. (New) The dispersion as claimed in claim 25, in which the polymer is in the form of a block polymer comprising water-soluble units alternating with units with an LCST, or in the form of a grafted polymer whose backbone is formed from water-soluble units and bears grafts consisting of units with an LCST, this structure possibly being partially crosslinked.

30. (New) The dispersion as claimed in claim 25, in which the water-soluble units are obtained by free-radical polymerization of at least one monomer chosen from:

- (meth)acrylic acid;
- vinyl monomers of formula (I) below:



in which:

- R is chosen from H, -CH₃, -C₂H₅ or -C₃H₇, and
- X is chosen from:
- alkyl oxides of -OR' type in which R' is a linear or branched, saturated or unsaturated hydrocarbon radical containing from 1 to 6 carbon atoms, optionally substituted with at least one halogen atom (iodine, bromine, chlorine or fluorine); a sulfonic (-SO₃⁻), sulfate (-SO₄⁻), phosphate (-PO₄H₂); hydroxyl (-OH); primary amine (-NH₂); secondary amine (-NHR₁), tertiary amine (-NR₁R₂) or quaternary amine (-N⁺R₁R₂R₃) group with R₁, R₂ and R₃ being, independently of each other, a linear or branched, saturated or unsaturated hydrocarbon radical containing 1 to 6 carbon atoms, with the proviso that the sum of the carbon atoms of R' + R₁ + R₂ + R₃ does not exceed 7; and
- -NH₂, -NHR₄ and -NR₄R₅ groups in which R₄ and R₅ are, independently of each other, linear or branched, saturated or unsaturated hydrocarbon radicals containing 1 to 6 carbon atoms, with the proviso that the total number of carbon atoms in R₄ + R₅ does not exceed 7, the said R₄ and R₅ optionally being substituted with a halogen atom (iodine, bromine, chlorine or fluorine); a hydroxyl (-OH); sulfonic (-SO₃⁻), sulfate (-SO₄⁻); phosphate (-PO₄H₂); primary amine (-NH₂); secondary amine (-NHR₁), tertiary amine (-NR₁R₂) and/or quaternary amine (-N⁺R₁R₂R₃) group with R₁, R₂ and R₃ being, independently of each other, a linear or branched, saturated or unsaturated hydrocarbon radical containing 1 to 6 carbon atoms, with the proviso that the sum of the carbon atoms of R₄ + R₅ + R₁ + R₂ + R₃ does not exceed 7;

- maleic anhydride;
- itaconic acid;
- vinyl alcohol of formula $\text{CH}_2=\text{CHOH}$;
- vinyl acetate of formula $\text{CH}_2=\text{CH}-\text{OCOCH}_3$;
- N-vinyl lactams such as N-vinylpyrrolidone, N-vinylcaprolactam and N-butyrolactam;
- vinyl ethers of formula $\text{CH}_2=\text{CHOR}_6$ in which R_6 is a linear or branched, saturated or unsaturated hydrocarbon radical containing from 1 to 6 carbons atoms;
- water-soluble styrene derivatives, especially styrene sulfonate;
- dimethyldiallylammonium chloride; and
- vinylacetamide

31. (New) The dispersion as claimed in claim 25, in which the water-soluble units consist totally or partially of one or more of the following components:

- water-soluble polyurethanes,
- xanthan gum,
- alginates and derivatives thereof such as propylene glycol alginate,
- cellulose derivatives and especially carboxymethylcellulose,

hydroxypropylcellulose, hydroxyethylcellulose and quaternized hydroxyethylcellulose,

- galactomannans and derivatives thereof such as konjac gum, guar gum,

hydroxypropylguar, hydroxypropylguar modified with sodium methylcarboxylate groups, and hydroxypropyltrimethylammonium guar chloride, and

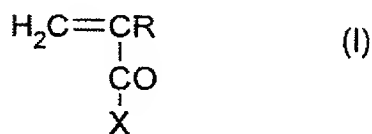
- polyethyleneimine.

32. (New) The dispersion as claimed in claim 25, in which the water-soluble units have a molar mass ranging from 1000 g/mol to 5 000 000 g/mol when they constitute the

water-soluble backbone of a grafted polymer, or a molar mass ranging from 500 g/mol to 100 000 g/mol when they constitute a block of a multiblock polymer or when they constitute the grafts of a grafted polymer.

33. (New) The dispersion as claimed in claim 25, in which the units with an LCST consist of one or more of the following polymers:

- polyethers such as polyethylene oxide (PEO), polypropylene oxide (PPO) and random copolymers of ethylene oxide (EO) and of propylene oxide (PO),
- polyvinyl methyl ethers,
- polymeric and copolymeric N-substituted acrylamide derivatives with an LCST, such as poly-N-isopropyl acrylamide, poly-N-ethylacrylamide and copolymers of N-isopropylacrylamide or of N-ethylacrylamide and of a vinyl monomer corresponding to formula (I)



in which:

- R is chosen from H, -CH₃, -C₂H₅ or -C₃H₇, and
- X is chosen from:
- alkyl oxides of -OR' type in which R' is a linear or branched, saturated or unsaturated hydrocarbon radical containing from 1 to 6 carbon atoms, optionally substituted with at least one halogen atom (iodine, bromine, chlorine or fluorine); a sulfonic (-SO₃⁻), sulfate (-SO₄⁻), phosphate (-PO₄H₂); hydroxyl (-OH); primary amine (-NH₂); secondary amine (-NHR₁), tertiary

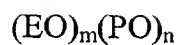
amine ($-NR_1R_2$) or quaternary amine ($-N^+R_1R_2R_3$) group with R_1 , R_2 and R_3 being, independently of each other, a linear or branched, saturated or unsaturated hydrocarbon radical containing 1 to 6 carbon atoms, with the proviso that the sum of the carbon atoms of $R' + R_1 + R_2 + R_3$ does not exceed 7; and

- $-NH_2$, $-NHR_4$ and $-NR_4R_5$ groups in which R_4 and R_5 are, independently of each other, linear or branched, saturated or unsaturated hydrocarbon radicals containing 1 to 6 carbon atoms, with the proviso that the total number of carbon atoms in $R_4 + R_5$ does not exceed 7, the said R_4 and R_5 optionally being substituted with a halogen atom (iodine, bromine, chlorine or fluorine); a hydroxyl ($-OH$); sulfonic ($-SO_3^-$), sulfate ($-SO_4^-$); phosphate ($-PO_4H_2$); primary amine ($-NH_2$); secondary amine ($-NHR_1$), tertiary amine ($-NR_1R_2$) and/or quaternary amine ($-N^+R_1R_2R_3$) group with R_1 , R_2 and R_3 being, independently of each other, a linear or branched, saturated or unsaturated hydrocarbon radical containing 1 to 6 carbon atoms, with the proviso that the sum of the carbon atoms of $R_4 + R_5 + R_1 + R_2 + R_3$ does not exceed 7;

or of a monomer chosen from maleic anhydride, itaconic acid, vinylpyrrolidone, styrene and its derivatives, dimethyldiallylammonium chloride, vinylacetamide, vinyl ethers and vinyl acetate derivatives; and

- polyvinylcaprolactam and vinylcaprolactam copolymers.

34. (New) The dispersion as claimed in claim 25, in which the units with an LCST consist of polypropylene oxide (PPO)_n with n=10 to 50, or random copolymers of ethylene oxide (EO) and of propylene oxide (PO), represented by the formula:

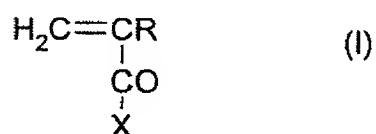


in which m is an integer ranging from 1 to 40 and preferably from 2 to 20, and n is an integer ranging from 10 to 60 and preferably from 20 to 50.

35. (New) The dispersion as claimed in claim 34, in which the molar mass of the units with an LCST is from 500 to 5300 g/mol and preferably from 1500 to 4000 g/mol.

36. (New) The dispersion as claimed in claim 33, in which the units with an LCST are polymeric or copolymeric N-isopropylacrylamide or N-ethylacrylamide derivatives and the molar mass of these units with an LCST is from 1000 g/mol to 50 000 g/mol and preferably from 2000 to 50 000 g/mol.

37. (New) The dispersion as claimed in claim 25, in which the units with an LCST consist of a polyvinylcaprolactam or a copolymer of vinylcaprolactam and of a vinyl monomer corresponding to formula (I)



in which:

- R is chosen from H, -CH₃, -C₂H₅ or -C₃H₇, and
- X is chosen from:
- alkyl oxides of -OR' type in which R' is a linear or branched, saturated or unsaturated hydrocarbon radical containing from 1 to 6 carbon atoms, optionally substituted with at least one halogen atom (iodine, bromine, chlorine or fluorine); a sulfonic (-SO₃⁻), sulfate (-SO₄⁻), phosphate (-PO₄H₂); hydroxyl (-OH); primary amine (-NH₂); secondary amine (-NHR₁), tertiary

amine ($-NR_1R_2$) or quaternary amine ($-N^+R_1R_2R_3$) group with R_1 , R_2 and R_3 being, independently of each other, a linear or branched, saturated or unsaturated hydrocarbon radical containing 1 to 6 carbon atoms, with the proviso that the sum of the carbon atoms of $R' + R_1 + R_2 + R_3$ does not exceed 7; and

- $-NH_2$, $-NHR_4$ and $-NR_4R_5$ groups in which R_4 and R_5 are, independently of each other, linear or branched, saturated or unsaturated hydrocarbon radicals containing 1 to 6 carbon atoms, with the proviso that the total number of carbon atoms in $R_4 + R_5$ does not exceed 7, the said R_4 and R_5 optionally being substituted with a halogen atom (iodine, bromine, chlorine or fluorine); a hydroxyl ($-OH$); sulfonic ($-SO_3^-$), sulfate ($-SO_4^-$); phosphate ($-PO_4H_2$); primary amine ($-NH_2$); secondary amine ($-NHR_1$), tertiary amine ($-NR_1R_2$) and/or quaternary amine ($-N^+R_1R_2R_3$) group with R_1 , R_2 and R_3 being, independently of each other, a linear or branched, saturated or unsaturated hydrocarbon radical containing 1 to 6 carbon atoms, with the proviso that the sum of the carbon atoms of $R_4 + R_5 + R_1 + R_2 + R_3$ does not exceed 7;

or of a monomer chosen from maleic anhydride, itaconic acid, vinylpyrrolidone, styrene and its derivatives, dimethyldiallylammonium chloride, vinylacetamide, vinyl alcohol, vinyl acetate, vinyl ethers and vinyl acetate derivatives.

38. (New) The dispersion as claimed in claim 37, in which the molar mass of the units with an LCST is from 1000 to 500 000 g/mol and preferably from 2000 to 50 000 g/mol.

39. (New) The dispersion as claimed in claim 25, in which the proportion by mass of units with an LCST in the polymer is from 5 to 70%, preferably from 20 to 65% and better still from 30 to 60% relative to the polymer.

40. (New) The dispersion as claimed in claim 25, in which the demixing temperature of the units with an LCST is from 10 to 35°C, for a concentration in water of 1% by mass of the units with an LCST.

41. (New) The dispersion as claimed in claim 25, in which the concentration by mass of polymer in the aqueous phase is from 0.01 to 20% and preferably from 0.1 to 10%.

42. (New) The dispersion as claimed in claim 25, in which the polymer is such that an aqueous solution of this polymer at 2% by weight has a gel point of from 5 to 40°C and preferably from 10 to 35°C.

43. (New) The dispersion as claimed in claim 25, in which the oily phase comprises at least one oil chosen from hydrocarbon-based oils of animal or plant origin, synthetic esters and ethers, linear or branched hydrocarbons, essential oils, fatty alcohols, fluoro oils and silicone oils, and mixtures thereof.

44. (New) The dispersion as claimed in claim 25, also comprising one or more adjuvants commonly used in cosmetics and dermatology, such as mineral or organic fillers, surfactants, hydrophilic or lipophilic active agents, preserving agents, gelling agents, plasticizers, antioxidants, fragrances, odor absorbers, antifoams, sequestering agents, pH adjusters, buffers and dyestuffs.

45. (New) The dispersion as claimed in claim 25, which is in the form of a cosmetic make-up or care composition, which may be applied to the skin, including the scalp, the nails,

the hair, the eyelashes, the eyebrows, the eyes, mucous membranes and semi-mucous membranes, and any other area of body or facial skin.

46. (New) Cosmetic use of the dispersion as claimed in claim 25, to treat, care for and/or make up facial skin and/or body skin, mucous membranes (lips), the scalp and/or keratin fibres.

47. (New) A cosmetic process for treating human keratin materials, wherein a dispersion as claimed in claim 25 is applied to the keratin materials.

48. (New) Use of a polymer comprising water-soluble units and units with an LCST, added to the aqueous phase of dispersions comprising at least one aqueous phase and at least one oily phase, to ensure the stability of these dispersions when they are subjected to temperature variations in the range from 4 to 50°C.

REMARKS

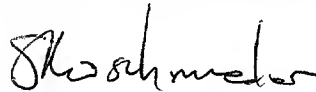
Claims 25-48 are active in the present application. Claims 1-24 have been canceled.

Claims 25-48 are new claims. Support for the new claims is found in the original claims.

The new claims consist of the original claims rewritten for clarity and to remove multiple dependencies. No new matter is added. An action on the merits and allowance of claims is solicited.

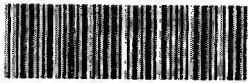
Respectfully submitted,

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Amendment Filed on: 3-14-2002

IN THE CLAIMS

--Claims 1-24 (Canceled).

Claims 25-48 (New).--